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METER PRACTICES OF THE TERRE HAUTE WATER COMPANY

By Dow R. GWINN¹

Several papers in recent numbers of the JOURNAL explaining features of the meter practice in several cities suggest that the methods of The Terre Haute Water Works Company may be of interest to the members. The conditions of water supply in the city are rendered rather unusual by the ease with which water may be obtained from the ground, so that there is a tendency rather more marked than usual to employ private supplies. This has made the problems of metering more sensitive to public opinion than is often the case and has also had its effect on the general subject of practicable rates. The supply is coagulated, settled, filtered, chlorinated and pumped, most of it being pumped twice, and it is therefore necessary as a business matter to collect revenue from all water that is furnished to consumers, whether they use or waste it. This can only be done satisfactorily by metering.

At first only large consumers like railways and industrial plants were metered. Then hotels, public buildings, livery stables, saloons and photographic galleries were metered, and after that stores and restaurants. Not much opposition was encountered to metering these consumers, but when the practice was extended to boarding and rooming houses there was an immediate vigorous public protest and the manager of the company was denounced at various indignation meetings of irate citizens. One reason for the outburst of feeling at this time was that there are two large educational institutions in the city and consequently a relatively large proportion of rooming and boarding houses.

Opposition of this kind had to be met vigorously in an educational way, so the company bought space in the newspaper advertising columns and published a series of "Water Talks" or statements

¹ President and Manager, The Terre Haute Water Works Company, Terre Haute, Ind. Discussion of this paper is requested and should be sent to the Editor.

of the reasons for the adoption of the company's policy. There was constant repetition of the sentence, "It is a good thing to pay for what you get," and it was interesting to hear some of the company's customers using the expression later, apparently unconscious that it was the company's slogan in its advertising campaign.

In 1914, with 44 per cent of the services metered, including practically every factory and business place, the average daily consumption was 82 gallons per capita or a total of 4,939,617 gallons. This was the average; but there was a peak load of over 16,000,000 gal-

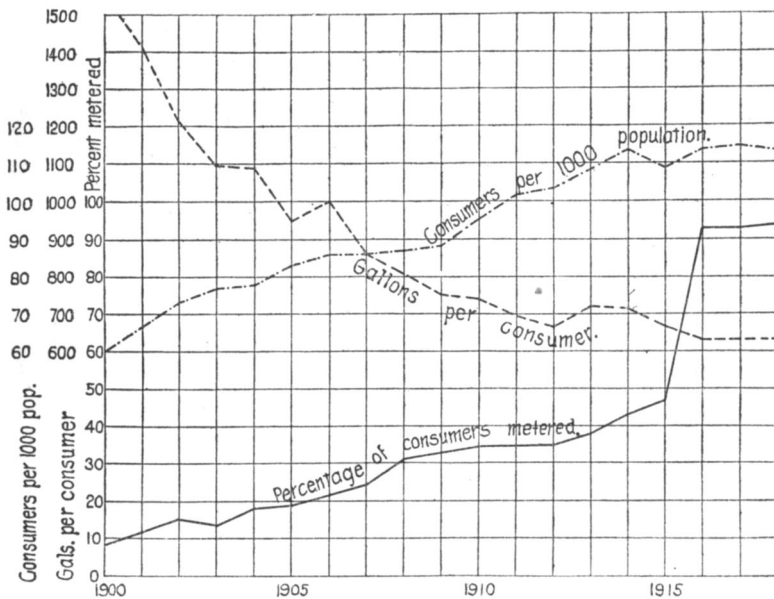


FIG. 1. PROGRESS IN METERING AND ITS EFFECT ON CONSUMPTION

lons per day during sprinkling hours on hot days. This produced such a draft on the works, which are of the direct pumping type, that had a serious fire occurred during such hours it would have been impossible to maintain adequate fire pressure. It became evident, therefore, that a meter should be installed on every flat rate service with a hose connection. The reasons for this step were explained carefully in detail in a circular mailed to the consumers before the meters were installed, which was done in 1916, and but two protests of importance were made against this metering, although 3700 meters were set in that year. As a result, in 1917, the hot-weather

peak load was less than 10,000,000 gallons, a reduction of over 6,000,000 gallons, and the average daily consumption was 4,813,765 gallons or 74 gallons per capita. The general consumption and meterage figures for the last eighteen years are shown in figure 1; the small number of consumers per thousand population was explained in the opening paragraph.

The effect of metering on the pumpage has been most interesting. In 1900, with 8 per cent of all the services metered, the pumpage was 1564 gallons per consumer, while in 1918, with 95 per cent of the services metered, the pumpage was 646 gallons per consumer. During the same period the per capita consumption was reduced

TABLE 1

Classification of the commercial class of consumers in Terre Haute according to the amount of water taken during 1918

QUANTITY TAKEN	NUMBER	PERCENT- AGE OF ALL
Less than 750 gallons per month.....	553	7.8
750 gallons per month.....	898	12.6
1,500 gallons per month.....	933	13.1
2,250 gallons per month.....	1,060	14.9
3,000 gallons per month.....	1,061	14.9
3,750 gallons per month.....	702	9.9
4,500 gallons per month.....	477	6.8
5,250 gallons per month.....	320	4.5
6,000 gallons per month.....	226	3.2
6,750 to 9,750 gallons per month.....	492	6.9
10,500 to 19,500 gallons per month.....	239	3.4
20,250 gallons and over per month.....	141	2.0

from 90 to 74 gallons, and the number of consumers per thousand population was increased from 58 to 114, or 17 persons per live service in 1900 and 8.7 in 1918. The very important reduction of the peak load in 1916 and 1917 has already been referred to. This was an improvement in consumption conditions which directly assisted the pumping station records but did not materially affect the per capita consumption, since these peak loads only came during the sprinkling hours of hot days and did not have a great enough total influence to make any marked effect on the annual rates of consumption.

During 1918 there were four consumers who took a total of 1,500,000 gallons, one of them taking about 900,000 gallons per day. Over 99 per cent of the metered consumers are classed as commercial,

under the rules of the Public Service Commission of Indiana. This class does not include railroads, factories, public parks or street sprinkling carts. There were 7102 of these commercial consumers who took water in accordance with the figures given in table 1 and figure 2. The minimum rate allows the use of 3,000 gallons per month, so that 4,505 consumers, 63.3 per cent of all in this class, did not pay over \$0.75 per month. The average amount of each bill in 1918 for commercial consumers, based on a rate of \$0.25 per

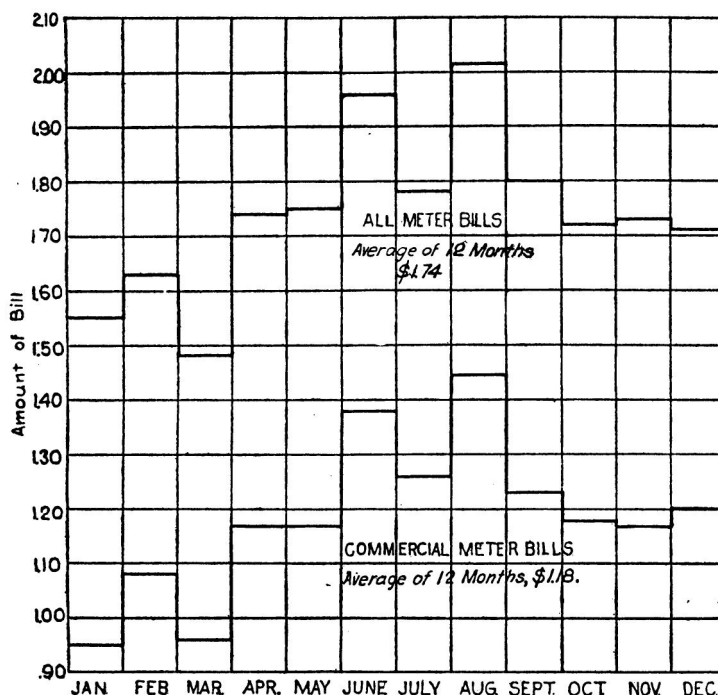


FIG. 2. AVERAGE MONTHLY METER BILL IN 1918

thousand for the first 20,000 gallons used in a month and \$0.20 per thousand for the next 80,000 gallons used in the same month, was \$1.25; the actual average was \$1.18. Formerly the lowest rate was 5 cents per thousand for very large quantities, but this has been increased to 5½ cents. For all metered consumers in every class the average monthly bill was \$1.74. Only 2.3 per cent of the metered consumers of every class used over 20,000 gallons per month, on the average. At this writing 97 per cent of all consumers are metered.

The flat rate consumers are occupants of small houses with kitchen use only.

As is generally known, the subject of rates has been a most trying one in Terre Haute. In 1913 the annual flat rates were \$5 for domestic use in a house with six rooms or less, plus \$1 for each additional room. In addition there was a charge of \$3 for a bath, \$3 for a closet, \$5 for 30 feet frontage of lawn requiring water for sprinkling plus 5 cents per foot for additional frontage, corner lots to be measured the longest way. In that year the minimum rate for $\frac{5}{8}$ -inch meters was \$12 per year and the rate for the first 20,000 gallons per month was \$0.30 per thousand. In that year the company supplied 819 residences, apartment houses and boarding and rooming houses through meters. On the flat rate basis the average monthly payments would have been \$1.86, while the average monthly payment by meter was \$1.34, a reduction of \$0.52, per month, or \$6.24 or 23 per cent per year. During a period of about five years the average reduction in the revenue from this class of consumers through changing from a flat to a meter basis was about 25 per cent. The average daily use of water by these 819 consumers in 1913 was 150 gallons.

During the first three months of 1918 the minimum meter rate was \$0.60 per month for small meters and during the last nine months it was \$0.75. The company's records show that a group of 98 residence consumers, with bath rooms and hose connections, paid an average of \$0.97 per month, or \$0.65 or 40 per cent less than what the service would have cost on the flat rate basis. Had the minimum rate been \$0.75 per month for the entire year, giving the consumers the right to take 3000 gallons per month, the average per month would have been \$1.01, a reduction of 38 per cent from what would have been paid under the flat rate schedule.

The company furnishes the meters and installs them without charge. The consumer is liable for any injury to a meter due to any lack of ordinary care of the meter on his part. The company maintains the meter except when it is damaged by hot water. Every bill bears the announcement: "The company will test meters in the presence of consumers, free of charge." Very few consumers ask for such a test, but the offer to make it is a good business measure as showing the confidence of the company in its meters.

Where meters are set in cellars they are located below the floor level at the point where the service enters the cellar. The rules of

the company require the service pipes to be laid at a depth of not less than $4\frac{1}{2}$ feet below the ground surface and to be laid under the foundations and at least 1 foot below the bottoms of cellars. A pit 20 by 26 inches, lined with brick or concrete, is constructed for the meter in the cellar. Either an iron cover or one made of 2-inch boards may be used. After the meter has been set it may be surrounded with sawdust or old newspapers to prevent freezing, if this is considered desirable. There are about 2000 meters installed in this way.

There are 317 meters installed in outdoor brick-lined pits 2 feet 8 inches in diameter at the bottom and $4\frac{1}{2}$ feet deep. They have cast iron frames with covers giving an opening of 19 inches. No meter installed in such a pit in Terre Haute has ever been frozen.

In order to reduce the cost of such outdoor installations about 750 meters were placed in brick pits 3 feet 3 inches deep and 2 feet 8 inches in diameter at the bottom, with the same covers as the larger brick-lined pits. The meter was raised to within 3 feet 3 inches of the surface by risers, the pit containing these risers being backfilled with earth.

The next type of pit was made with a concrete tile 15 inches in diameter and $3\frac{1}{2}$ feet long, provided with a Wabash cover 9 inches high having an 8-inch opening and an extra lid. This made the total depth of this pit 4 feet 3 inches. The meter was supported on a Ford yoke by risers holding it about 13 inches below the surface of the ground. Some of the later installations of this type were made with clay tile. Experience shows that better results would have been obtained in the sandy soil which is prevalent at Terre Haute with a tile 20 inches in diameter and about 5 feet long, and possibly vitrified clay tile would have been preferable to concrete in resisting cold. There are nearly 4000 meters set in pits of this type.

Recently the company has been using a pit made of two $2\frac{1}{2}$ -foot 20-inch vitrified sewer pipes, with a slot in the bottom of the lower one to fit over service pipes laid some years ago before the present rules concerning the depth of the services were in force. These pipes are provided with a Clark cover and coupling yolk. The cover is 6 inches high, making the total depth of the installation $5\frac{1}{2}$ feet.

Including cost of providing service pipe from the main to the curb, the average 1918 cost of an installation of the type last described

KEUNEKE MILL'Y CO. 7523
657 WABASH AVE.

LOCATION OF METER
Xt Basement

METER
5/8" Empire

NUMBER
46535

REMARKS BY NO.	DATE	READING					READER
	1918						
	May						
	June						
	July						
	Aug.						
	Sept.						
	Oct.						
	Nov.						
	Dec.						
	1919						
	Jan.						
	Feb.						
	March						
	April						
	May						
	June						
	July						
	Aug.						
	Sept.						
	Oct.						
	Nov.						
	Dec.						
	1920						
	Jan.						
	Feb.						
	March						
	April						
	May						
Size, 9"x 4 1/4"							

FIG. 3. FACE OF SHEET IN METER READER'S BOOK

MR. METER READER:

Please remember that you are the personal representative of the manager of this company; that our patrons will judge the Company and the manager by you, by your conduct, and by what you say; that to the people with whom you come in contact, you are the Company.

Polliteness is cheap, but it pays big dividends.

If location of meter is not shown on card, make proper entry.

Endeavor to return reading of every meter for which you have a card.

Meter well covers should be carefully replaced and locked.

Make record under "Remarks" by number, when possible. The figure 13 opposite a reading will mean that you had noticed the high consumption and that you were SURE THAT THE READING WAS CORRECT.

DO NOT RETURN AN UNUSUAL READING WITHOUT AN EXPLANATION and when anything out of the ordinary is noticed, call attention to it by one, or more, of the numbers.

Refer all requests as to the quantity of water consumed, or to the amount of the bill, to the office—Telephone No. 215.

Report at the office about 5:45 P. M.—not later, telephone particulars if you cannot come.

Get acquainted with the numbers and use them.

When meters are in basements, let the people know that you are there to read the water meter. If the occupants are away, do not attempt to get in—if anything was missing you might be blamed.

Be sure to close all trap doors. Remember the Golden Rule.

1. Meter not Registering.
2. Closet in basement leaking.
3. Closet on 1st floor leaking.
4. Closet on 2d floor leaking.
5. Closet was leaking—been repaired.
6. Kitchen faucet leaking.
7. Bath tub faucet leaking.
8. Basin faucet leaking.
9. Meter coupling leaking, inlet.
10. Meter coupling leaking, outlet.
11. Meter registering slowly, indicating a leak.
12. Did not find any leaks.
13. Consumption high; reading is correct.
14. Consumption low; reading is correct.
15. Meter registers when faucet is open.
16. Covered, could not read.
17. Could not get in house.
18. Premises vacant.
19. Glass broken.
20. Counter broken.
20. Meter well needs attention.

THE TERRE HAUTE WATER WORKS CO.

APRIL, 1918 10M

Size of sheet, 9"x4 1/4"

FIG. 4. REVERSE OF SHEET IN METER READER'S BOOK

The water consumption at No. _____ street is larger than usual. It may be that an extra quantity of water is being used at this time, or possibly some of the fixtures may be leaking.

Whenever information of this kind comes to us, we like to pass it on to our valued customers, so that if there are leaks, they can have repairs made.

And please remember that we will be glad to send one of our men to inspect your water fixtures if you desire it. There is no charge for service of this kind.

Yours very truly,

THE TERRE HAUTE WATER WORKS CO.

Both Telephones No. 215.

Our meter reader called today and was unable to gain admission to your residence. To save your time, as well as ours, please read the meter, enter the figures on this card, date and mail.

THE TERRE HAUTE WATER WORKS CO.

Telephones 215

634 Cherry Street.

SIGNATURE _____

Reading of meter _____

No. _____

Date _____ 191 _____

Ledger No. _____

A second reading of the water meter at premises No. _____ shows that the former reading was correct. The reading as shown on the bill was _____ the second reading on _____ was _____

Yours very truly,

THE TERRE HAUTE WATER WORKS CO.

FIG. 5. THREE POSTAL CARD NOTICES

[illegible]

FROM A LOOSE-LEAF METERED WATER LEDGER

was \$16.47 for the service alone, made up of the following items: $\frac{5}{8}$ -inch corporation cock, \$1.09; $\frac{5}{8}$ -inch curb cock, \$1.66; $\frac{3}{4}$ -inch brass tail piece, \$0.38; 17.1 feet $\frac{5}{8}$ -inch extra strong lead service pipe, 3 pounds per foot, \$3.72; service box with 2 $\frac{1}{2}$ -inch shaft, \$1.50; 10.9 hours labor at 35 cents, \$3.82; 2.2 hours labor at 40 cents, \$0.88; drayage, \$1.25; city permits, \$0.87; overhead on tools and equipment, \$1.30. In addition to this cost for the service there was an average cost of \$25.80 for the meter and its installation, made up of the following items: $\frac{5}{8}$ -inch Empire meter, \$12.00; two tile, \$3.70; Clark cast iron cover, \$2.75; meter yoke, \$1.50; pipe and fittings, \$0.93; cement, \$0.37; 5 hours labor at 35 cents, \$1.75; 2 hours labor at 40 cents, \$0.80; drayage, \$2.00. This makes the total cost of the service and meter provided by the company, \$42.27, as an average during 1918.

The greatest recorded depth to which frost has penetrated the sandy soil of Terre Haute is 4 feet 7 inches. In a city not far distant where the soil is clay, frost does not penetrate to a depth of 3 feet. During the winter of 1917-1918 there were seventeen days when the Weather Bureau office at Terre Haute recorded temperatures of zero or below zero, with a minimum of 18° below. Out of the 7064 meters in service at that time, 616 or 8.7 per cent were frozen. None of the installations in the 4 $\frac{1}{2}$ -foot brick-lined pits were frozen, 2.6 per cent of those in basements and cellars were frozen, 4.5 per cent of those in the 18-inch concrete tile pits, 11.2 per cent of those in 15-inch tile pits, and 16.2 per cent of those in brick-lined pits 3 feet 3 inches deep. Most of the cases of frozen meters in basements were due to open windows.

The first outdoor pits had non-locking covers, so that consumers could read the meters whenever they desired. Four complaints were received from persons who said they had been injured by stepping on loose lids, which turned under them. Two suits for a total of \$12,000 damages were brought on this account and settled at a cost of \$1000. This experience led the company to replace the old lids with locking lids and to use the latter type exclusively in subsequent installations. A few consumers object to them because they cannot read the meters whenever they wish, but the company offers to open the box upon request, which is very rarely made.

About the twentieth of each month a start is made in reading the meters, so that the bills may be ready for delivery on the last day of the month, when they are due. From ten to twelve readers

TEN Per Cent. Added if not Paid by December 10, '19

To The Terre Haute Water Works Co., Dr.

Water Service by Meter from about Oct. 25, 1919 to about Nov. 25, 1919

Present Reading	489.00	THE TERRE HAUTE WATER WORKS CO.
Last "	477.00	Bill
Cubic Feet Used	12.00	x 7 1/2 Equals 9,000 gals. \$2.25
Minimum Rate \$		per month

W. L. MC PEAK,
663 WABASH AVE.

7527

The Company Test's Meters in the presence of Consumers, free of charge.

Size, 9 1/2" x 3 1/2"

THIS BILL IS DUE AND PAYABLE AT
WATER OFFICE ON NOV. 30 1919

Please Bring This Bill With You. Office, 634 Cherry St. Hours: 8 a. m. to 5 p. m.

Please Pay NOW and Avoid Penalty

9,000 gals. \$2.25

W. L. MC PEAK,
663 WABASH AVE

7527

Mail this stub with your check
Keep bill for your reference
Entered check will be your receipt

Received by

FOR

NOVEMBER 1919

The Terre Haute Water Works Company

FIG. 7. FACE OF BILL AND ITS ATTACHED COUPON

Meter and Minimum Rates, as per order of The Public Service Commission of Indiana, April 1, 1919.

Apply to water registered by the meters in each month, being the period between the regular meter readings, about the 25th of each month, and are as follows:

For the first 20,000 gallons in one month.....25c per 1,000 gallons
 For the next 80,000 gallons after the first
 20,000 gallons in same month.....20c per 1,000 gallons
 For the next 200,000 gallons after the first
 100,000 gallons in same month.....14c per 1,000 gallons
 For the next 700,000 gallons after the first
 300,000 gallons in same month.....10c per 1,000 gallons
 For the next 1,000,000 gallons after the first
 1,000,000 gallons in same month 9c per 1,000 gallons
 For the next 1,000,000 gallons after the first
 2,000,000 gallons in same month 8c per 1,000 gallons
 For all in excess of, or in addition to, the
 first 3,000,000 gallons in same month..0575 per 1,000 gallons

MINIMUM CHARGE OR RATE FOR METERED SERVICE

Every metered water supply service shall have a monthly minimum charge or rate on every meter installed, varying with and based upon the size of meter required and installed, in accordance with the rules of the Company, as follows:

MONTHLY MINIMUM RATE

Size of Meter	Without Fire Protection	With Fire Protection
1/2".....	\$.75 for 3,000 gallons or less	
3/4".....	1.50	
1".....	3.00	\$ 4.50
2".....	6.00	9.00
3".....	10.00	15.00
4".....	15.00	22.50
6".....	75.00	112.50
8".....	100.00	150.00

A delayed payment charge of ten per cent. will be added to all bills not paid within ten days after due.

Where two or more meters are used on the same premises by the same Consumer, the minimum charges or rates may be combined and the consumption through the two or more meters added together and figured as if the entire quantity had passed through one meter; this also applies to municipalities, street sprinkling contractors and railroad companies.

MINIMUM PERIOD.

4. On all metered water supply services, each and every month shall be a complete period in itself and no excess consumption of water during one month shall be charged against the minimum charge, or rate, or be added to the consumption of any other month, or months.

TEMPORARY METER SERVICE RATES.

6. Where water is desired on the meter basis for only a portion of the year, such as use for building purposes, street paving, or for sprinkling in Summer months, the amount paid each time the meter is used (for period less than one year) shall be at least twelve (12) times the monthly minimum rate; for street paving contractors, this means each time the location of the meter is changed.

If a consumer has water on for sprinkling and should vacate the premises, or there should be a change in occupants of the premises during the Summer, the charge will be equitably apportioned.

Perforated ↓

FIG. 8. NOTICE ON BACK OF BILL

are employed, mainly men used regularly by the company in various capacities. On Saturdays three or four high school boys are employed on meter reading, for which service they are paid 35 cents an hour. The readings are entered on heavy linen sheets, figures 3 and 4, about 200 of which can be placed in a loose-leaf binder. The name, street number and ledger number are printed on these sheets by an addressograph machine, and experience shows that the readings are expedited by giving the general location of the meter on the sheet.

There are 37 meter-reading routes, two of which are covered by men who ride bicycles. At the office there are portable blackboards 31 by 42 inches in size, with painted headings and lines numbered to correspond with the numbers of the meter books. The headings are: "Reader, Time out, Time in." The reader writes his name and time out opposite the number of the book he takes, which must be the one next above the last one recorded, for the readers are not allowed to select particular books or routes. The average number of readings per hour ranges from 30 in April to 22 in June. The best individual record was an average of 49 per hour in April and the lowest in that month was 22.

The average cost of reading meters for the year ending June 30, 1919, was \$184.60 per month. As there were 7462 meters this was about $2\frac{1}{2}$ cents per meter. The expense is materially increased by the necessity of going back over the routes in order to read meters in basements which could not be entered during the first trip, and by extra readings where it seems probable that an error has been made. Where the house is locked but there are indications that somebody is home evenings, a stamped postal card, figure 5, is sent with a request that the meter be read and the reading reported on the card.

Loose-leaf ledgers, figure 6, are used, arranged in order on the different streets, beginning with the lowest numbered streets, then the diagonal streets, and finally those at right angles with the numbered streets. The meter routes follow the arrangement of the accounts in the ledger as closely as possible. At the front of each reading book is the monthly record of the clerks who enter the readings. Each clerk is provided with a table showing for each 100 cubic feet the equivalent number of gallons and the charge for that amount at schedule rates. This table runs up to 32,000 cubic feet.

After the readings and charges are entered in the ledger, a second clerk copies the readings and cubic feet on the bills, figures 7 and 8, previously addressed on the addressograph. A third clerk stamps the gallons and amount due. Rubber stamps are provided for each 100 cubic feet and are so marked on top; on the face is shown the equivalent number of gallons and the amount due, figure 9. These stamps are arranged in a special case to facilitate their use. Later the bills are compared with the ledger to detect errors and omissions.

Except for about 200 accounts, all bills are delivered by messenger directly to the consumer, who is expected to pay the messenger. About 40 per cent of them do pay in this way. This delivery is made on the last day of the month by some of the regular employees of the company and by about 15 to 18 extra helpers, mostly women and girls, who are paid \$3 for about eight hours work.

750 gals. Minimum 75¢	5,250 gals. \$1.31
2,250 gals. Minimum 75¢	7,500 gals. \$1.87
3,000 gals. Minimum 75¢	25,500 gals. \$6.10
3,750 gals. 94¢	72,750 gals. \$15.55

FIG. 9. SOME OF THE RUBBER STAMPS USED ON BILLS

They must furnish references and are expected to read the company's instructions for the work, which are reprinted here, each morning before starting out, no matter how many times they have acted as messengers.

INSTRUCTIONS IN REGARD TO DELIVERING WATER BILLS

Report at office not later than 5:00 p.m.

Be sure you deliver the bills to the premises indicated on the bills. Ring the door bell, or knock and give every one an opportunity to pay the bill. We have complaints every month from some of our customers that our men do not give them a chance to pay their bills. Always endeavor to get the bill in the hands of the occupant of the premises.

Say to the consumer that he can pay the bill now, if he so desires and it will save him a trip to the office; that the bill should be paid before the 10th

of the month, as a 10 per cent penalty is added to the bill after the 10th of the month. Emphasize the fact that you are authorized to give a receipt and save them a trip to the office.

Collectors will be held responsible for the amount of money shown on the coupons and part payment should not be accepted on any bill; collect the entire amount, or none at all.

If the bill is paid, receipt same with your name and date and bring the stub, or coupon, to the office. *Take good care of the coupons.*

All bills which are receipted and show a credit balance on same are for consumers who have made an advance payment. Deliver such receipts to the consumer, but do not collect any money on same.

In making change, count your money very carefully; do not get confused while counting by carrying on conversation; when currency is handed to you, put it between your fingers until you have made the change, so that if there should be any question on the part of the customer as to whether the bill was a \$1.00 or \$5.00 bill, you would be in position to determine the matter.

Do not discuss amount of bills of other people, nor tell one consumer the amount of another consumer's bill. Do not show one consumer's bill to another consumer, nor discuss in any way the amounts charged. If the consumers want information, refer them to the office. Consumers will frequently state that the collector gave them information.

If no one is at home, place the bill in the mail box, or under the door.

If there should be any objection to the bill, suggest to the consumer that he call the office, telephone 215.

If premises are vacant, mark bill "*Vacant*" and bring to the office.

Be courteous to all. Smile and keep on smiling. Courtesy is cheap but it pays big dividends.

When you return to the office, see that all coupons are signed by you and dated. Give your coupons to one of the office girls who will list them for you.

Get a box from one of the office force to put your money in.

Take out your change and give it to one of the office girls, who will check it as returned.

Arrange your currency so that the larger bills will be on the bottom, all face up, and see that all bills are smoothed out and neatly arranged. Stack your silver in piles of each denomination and place them in a box with currency. Check the amount of each on a slip of paper and see if total agrees with that shown as the amount of your coupons.

Sign and date the coupon slip. Count coupons and enter number on slip. Place coupons in box with money and turn in to Secretary if amounts of cash items agree with total of coupon slip.

The routes are already laid out for them, so there need be little delay in beginning work. Three dollars in change, a large pocket book for currency and detached coupons, and two street car tickets are furnished to each messenger. They are held responsible for the money they collect and there are rarely shortages of more than a few cents. As soon as they reach the office the coupons are

Name	Time Ret'd	Change	Coupons	Amount	
Mrs. Heston	4:20	3 ⁰⁰	75	\$76.69	Finished
Miss Smith	4 P.M.	3 ⁰⁰	97	92.04	Fin.
Miss Wilhelm	5:15	3 ⁰⁰	80	103.76	Fin.
E. Kilby	4:50	3 ⁰⁰	82	85.54	Not Fin.
Mrs. Newton	1:30	—	106	139.05	Fin.
W. Cooke	2:50	—	64	79.84	Fin.
Mrs. Kautz	3:20	—	56	64.08	Fin.
Earl Johnson	5:15	3 ⁰⁰	57	56.58	Fin.
E. Johnson	5 P.M.	3 ⁰⁰	72	74.37	Fin.
C. A. Griffin	5 P.M.	3 ⁰⁰	52	46.25	Not Fin.
Miss Harper	1:30	—	96	160.07	Fin.
Mrs. Connelly	4:20	3 ⁰⁰	73	69.73	Fin.
Paul Smith	5:15	3 ⁰⁰	68	78.17	Fin.
Francis Bennett	1:40	—	22	45.21	Fin.
W. Biefield	5:20	3 ⁰⁰	69	72.59	Fin.
H. W. Cupps	5:20	3 ⁰⁰	120	126.71	Fin.
R. Bills	5 P.M.	3 ⁰⁰	82	80.20	Fin.
M. Mandeville	3:45	—	113	176.57	Fin.
H. W. DeLong	5:20	3 ⁰⁰	125	154.36	Fin.
Mrs. Bucherer	4 P.M.	3 ⁰⁰	42	56.21	Fin.
Mrs. Jackson	5:10	3 ⁰⁰	66	61.56	Fin.
Helen Burr	5 P.M.	3 ⁰⁰	84	79.56	Fin.
H. Kadel	3:50	—	114	293.98	Fin.
R. Crawford	5:15	3 ⁰⁰	80	77.36	Not Fin.
Edna Bennett	5:15	3 ⁰⁰	38	34.82	Not Fin.
	P.M.		2nd Route		
Mrs. Newton	5:20	3 ⁰⁰	14	18.74	Fin.
Miss Harper	5:10	3 ⁰⁰	24	28.31	Not Fin.
Francis Bennett	5 P.M.	3 ⁰⁰	23	45.21	Not Fin.
W. Cooke	5:20	3 ⁰⁰	12	14.92	Not Fin.
Mrs. Kautz	5 P.M.	3 ⁰⁰	3	4.12	Not Fin.
Taylor	5:15	3 ⁰⁰	28	26.89	Not Fin.
Total				2037	2578.49

Size of sheet, 13 1/4" x 8 1/4".

FIG. 10. COLLECTION RECORD, JULY 31, 1919

DAILY CASH RECEIPTS									
Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
COMMERCIAL									
METERED RATES									
1211	.75								
1344	.75								
1415	225								
	5156*								
2259	.75								
	5231*								
4356	169								
4789	225								
	5625*								
5276	94								
	5719*								
INDUSTRIAL									
METERED RATES									
H 746	225								
H 753	4567								
H 760	453								
	5245*								
Meter Deposits									
3263	400								
4311	500								
6187	500								
	1400*								
DELINQUENTS									
PREVIOUS TO									
CURRENT YEAR									
6187	189								
	189*								
COMMERCIAL									
ANNUAL RATES									
22	125								
34	125								
45	125								
	375*								
COMMERCIAL									
METERED RATES									
	5719								
INDUSTRIAL									
METERED RATES									
	5245								
Meter Deposits									
	1400								
DELINQUENTS									
PREVIOUS TO									
CURRENT YEAR									
	189								
COMMERCIAL									
ANNUAL RATES									
	575								
	12928*								
Forward									

Size of sheet, 18"x12 1/4"

FIG. 11. METHOD OF MAKING ENTRIES ON DAILY CASH RECEIPT BOOK WITH RUBBER STAMPS AND ADDING MACHINE

delivered to a clerk who lists them on an adding machine while the money is counted. The company has never had a dishonest messenger and the service has proved a great convenience to consumers in making it unnecessary for them to visit the office to make payments.

The actual collections made on July 31, 1919, are shown in figure 10. Figure 11 is a much reduced copy of a sheet from the Daily Cash Receipt Book, which shows how the records of the collections are kept. The name of the consumer is not entered, but instead the "number" of his ledger account, and the "amount" received. The engraving is so reduced in size that the five pairs of column

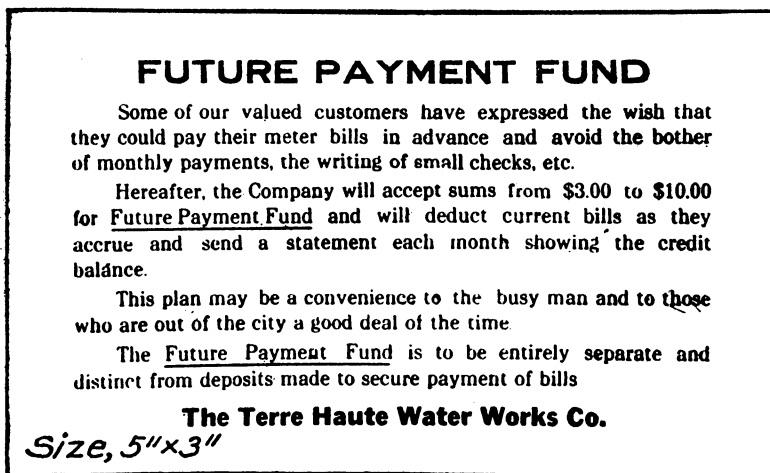


FIG. 12. NOTICE OF FUTURE PAYMENT FUND

headings of "number" and "amount" are indistinct. Entries are made with rubber stamps and an adding machine. At the end of a day's collections, which may cover several pages, they are recapitulated for posting in the General Cash Book. This General Cash Book is arranged so that the totals for each day are in one line, the amounts being entered under the proper headings. At the end of the month, the totals for the entire month are posted into the Ledger. This system has been found to save a great deal of time. The company also uses loose sheets uniform with the daily cash receipts, which are headed Accounts Receivable. After the charges have been made in the Consumers' Ledger, the amounts are listed

on the sheets, with the numbers, by the adding machine in the same way that the receipts are entered on the Daily Cash Receipts book. At the end of the month, the daily cash receipts plus the delinquents and minus the accounts charged previous to the current month should equal the accounts receivable.

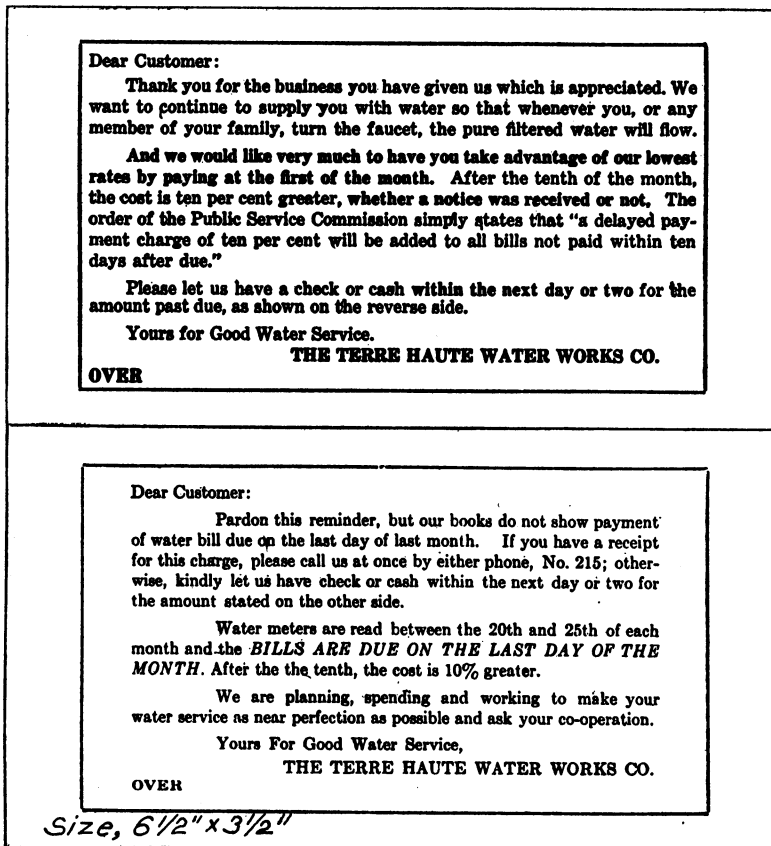


FIG. 13. TWO WARNINGS OF ADDITIONAL PAYMENT REQUIRED AFTER TENTH DAY OF THE MONTH

The average number of coupons brought in on one collection day was 87, the total being 2270. Of the 35 routes, about 25 are covered by the messengers on the last day of the month and the remainder on the following day. The average cost of delivering bills by hand for the six months ending June 30, 1919, was \$126.91 per

month. The average cost per bill was 1.76 cents, including the cost of collecting the 40 per cent of the bills that are paid on delivery. There is a delayed payment charge of 10 per cent when bills are not paid within ten days after they become due. From 93 to 94 per cent of the consumers pay by the tenth of the month. The additional 10 per cent is always collected.

The company has adopted the principle of accepting small deposits from customers to enable them to avoid the inconvenience of visiting the office to pay small bills. Figure 12 is the notice sent out from

THE TERRE HAUTE WATER WORKS CO.
OFFICE 634 CHERRY STREET TELEPHONE 215
TERRE HAUTE, IND.

We wish to acknowledge receipt of your check for \$_____ enclosed in envelope bearing Terre Haute post office stamp of_____

Under the order of the Public Service Commission of April 12, 1918, 10% is added to bills that are not paid within ten days after the same are due. Therefore, we are placing the amount of check to your credit which leaves a balance due of \$_____; this will be added to the next bill.

Yours very truly,
 THE TERRE HAUTE WATER WORKS CO.

P. S. At the suggestion of one of our customers, we have arranged to accept advance payments of \$3.00, \$5.00, or \$10.00. This plan is attractive to those who are frequently out of the City and to those who do not wish to be bothered with small bills. Statements are furnished monthly showing credit balance.

T. H. W. CO.

Size, 8 1/2" x 6 1/4"

FIG. 14. RECEIPT ON ACCOUNT

time to time to call attention to this policy. Various warnings are given to consumers regarding the automatic increase of 10 per cent in their bills after the tenth of the month, in accordance with the regulations of the Indiana Public Service Commission. Figure 13 gives two of these slips. When a consumer remits the original amount after the tenth of the month, he is sent the "receipt on account" reproduced in figure 14.

The records of individual meters are kept on cards, figure 15. The top of the card is cut off leaving only the stub indicating the size of the meter whose history is recorded on that card. Three sets of

Form No. 9 B

RECORD OF METERS SET—THE TER

	Date	Consumer	Location	Name and Size of Meter	Number of Meter	Regis
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						

Form No. 9 C

RECORD OF METERS REMOVED—THE

	Date	Consumer	Location	Name and Size of Meter	Number of Meter	Reg
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						

Form No. 9

METERS REPAIRED—THE TERRE I

	Date	Name and Size of Meter	Number	TESTS		COST OF REPAIRS			Total	Received for Repairs	Ledger No.
				Before Repairing	After Repairing	Labor	Material				
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											

FIG. 16. PARTS OF LOOSE-LEAF SHEETS USED I

[illegible][illegible][illegible]

CAF SHEETS USED IN KEEPING METER RECORDS